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Importance of Rural Markets in Taiwan's Development Strategy

by

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INTRODUCTION

Economic growth is characterized by increasing participation from farm households in both agricultural and nonagricultural markets. Kuznets noted that increased market involvement by households means increased intersectoral dependency through the purchasing of products, funds, and labor, i.e., economic resources, and thus the stimulation of agricultural and nonagricultural growth.[1] Agriculture's contribution to marketization, through increased farm sales and purchases of nonagricultural products for farm inputs or consumer goods, is particularly vital during the early periods of development. The strength of these agricultural-nonagricultural linkages, it is argued, affects the speed and stability of long-run economic growth. Strategies which emphasize strong agricultural development with concurrent decentralized industrialization increase such linkages and create a more balanced and stable rural growth.[2] Taiwan is an example of a country following such a strategy. Taiwan's development stands out from other developing countries because of its strong emphasis on agriculture as well as small-scale rural industrial development.

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1 Kuznets, Simon, "Economic Growth and the Contribution of Agriculture," in Agriculture in Economic Development, ed. Eicher and Witt (New York, McGraw-Hill, 1969).

2 See Clark, Edwards, "Strategies for Balanced Growth in Developing Countries," AER, No. 375, Economic Research Service, USDA, July 1977, B. F. Johnston and P. Kilby, Agriculture and Structural Transformation: Economic Strategies in Late-Developing Countries, (New York, Oxford Univ. Press, 1975) and John W. Mellor, The Economics of Growth (Ithaca, Cornell University Press, 1976).

A change from subsistence to commercial agriculture and emergence of rural industry creates major structural changes in rural markets. Because farm households possess and utilize most human and physical resources in rural areas in the early stages of development, the speed and pattern of modernization is greatly influenced by how farm households participate in rural markets. Study of the Taiwanese experience provides insights into how farm households, rural markets, and economic development are interrelated. Detailed farm household data systematically collected in Taiwan over a fifteen year period permits in depth analysis of such relationships.

Markets are broken down into the labor, farm product, financial, farm input and consumer goods markets. The analysis documents changes in household market relationships between 1960 to 1975, a period of rapid rural industrialization and agricultural growth. This paper summarizes a more extensive study on market participation by Taiwanese farm households.[3] The first section contains the theoretical framework for analyzing the markets, followed by a brief description of the methodology, setting, and data used. Second, the analyses results and their interpretation are presented. Finally, the importance and relevance of the findings are discussed.

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3 Marcia M. Gowen, "Farm Household Market Participation in Taiwan 1960-1975," unpublished M. S. Thesis, Department of Agricultural Economics and Rural Sociology, The Ohio State University, 1978.

FARM HOUSEHOLD MARKETS

Economic theory has usually focused either on the general role of markets during development or the behavior of households in a particular market. In recent years, theoretical work by Johnston and Kilby, Lele, Mellor, and Edwards began to clarify the importance of all household market activities for creating linkages or interrelationships between the agricultural and nonagricultural sectors during development.[4] These studies point out that household activities in any market must increase in such a way as to stimulate and expand participation in other markets. Further, they stress balanced agricultural and industrial development by diversifying and increasing market activities as the means for long-run, equitable rural development. While the importance of markets during growth is generally recognized, except for work on particular markets by Liedholm, King and Beyerlee, and Beyerlee, et al., little empirical analysis exists on the importance of aggregate or total market participation by farm households during development.[5]

Farm household markets are categorized in this study into the labor, farm product, financial, farm input, and consumer goods markets. This

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[4]See footnote 2, and Uma Lele, The Design of Rural Development: Lessons from Africa, (Baltimore, John Hopkins Press, 1976).

[5]Empirical evidence is given in Carl Liedholm, "Research on Employment in the Rural Non-farm Sector in Africa," African Rural Employment Research Paper No. 5, Michigan State University, (1973); R. King and D. Beyerlee, "Income Distribution, Consumption Patterns, and Consumption Linkages in Rural Sierra Leone," African Rural Economy Program Paper No. 16, Michigan State University (1977); and D. Beyerlee, et al., "Rural Employment in Tropical Africa: Summary of Findings," A. R. E. P. Paper No. 20, Michigan State University (February, 1977).

differentiation identifies markets by the different functions they fulfill for the household, eg., providing income vs. goods, inputs, or services. Theoretically, households are expected to alter their market participation as the marginal returns from participation change, due to the emergence of new opportunities, such as the introduction of off-farm employment. Changing market conditions will stimulate the substitution or complementarity among markets. Aggregate or total market participation, however, is expected to increase over time as the economy becomes more monetized, economic functions become more specialized, and households become less self-sufficient.

Participation in the labor market includes work on or off the farm. In this study, off-farm employment includes work on other farms, in rural or urban industries, in family non-farm businesses (sideline businesses), and in service or government jobs. Decisions to work on or off the farm are affected by the available job opportunities, relative wages, and substitutes for family farm labor (machinery or hired labor). Also household wealth or assets, skill levels of household members, desired and obtainable consumption or investment opportunities, plus household leisure-time preferences influence labor activities. In general farm and off-farm work are expected to act as substitutes, i.e., increasing off-farm work decreases farm labor time and vice versa. Because of Taiwan's intensive farming system and the scarcity of farm land during the mid-sixties, one expects off-farm work would rapidly increase as more off-farm job opportunities become available.

The farm product market indirectly influences labor use since sale of farm products influences the returns to farm labor. Basic production economics provides a theoretical framework for explaining farm household product market behavior.[6] Farm product composition varies as the comparative advantages of different products alter. Changes in factor and product prices, supply and demand for products, and the farm production capabilities of the farm are some factors influencing comparative advantages. Farm production capabilities in turn are affected by technological improvements or constraints, farm size as it conditions the economies of scale, total income available for investment, financial market activities, and income from off-farm sources. Farm enterprise selection is expected to differ between part-time and full-time farm households with part-time farms producing less time-intensive enterprises than full-time farms. In Taiwan, Shen found that farms with a higher proportion of off-farm income tend to have lower multiple cropping indices and farm production levels than full-time farms.[7] Wu noted part-time Taiwanese farm households tended to produce products which required less labor than full-time farm households.[8]

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[6]The basic theoretical foundation of production economics may be found in E. O. Heady, Economics of Agricultural Production (Prentice-Hill, 1952) and E. O. Heady and J. L. Dillon, Agricultural Production Functions, (Ames, Iowa State University Press), 1961.

[7]Shen, T. H., Agriculture's Place in the Strategy of Development: The Taiwan Experience (Taipei, Joint Commission on Rural Reconstruction), 1974.

[8]Wu, Mei-Yu, "A Study of Off-Farm Work by Taiwanese Farm Households," unpublished M. S. Thesis, Dept. of Agricultural Economics and Rural Sociology, The Ohio State University, 1978.

The financial market is crucial to a developing economy for providing alternative sources and uses of funds for households. Households participate in this market through borrowing and saving. Borrowing is affected by the real cost of capital, the nominal rate minus inflation plus borrowing costs. Negative real interest rates create excess demand for loans, usually resulting in small farmers being excluded from the market. In developing countries, where the financial market is generally incapable of providing adequate credit in rural areas, personal savings or self-financing becomes vital for growth. In Taiwan, farm household savings have played a crucial role in rural and industrial development. During the sixties, savings from households supplied over two-thirds of the net capital transfer out of agriculture.[9] It is argued that strong rural savings greatly facilitated the tremendous agricultural growth in Taiwan over the sixties.[10]

Relationships between the financial market and off-farm income have received little empirical attention. An Illinois study of off-farm income found the primary reason given by households for working off the farm was to reduce farm debt.[11] Nyanin, in his study of small farmer credit use in

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9 See B. F. Johnston and P. Kilby, op. cit., p. 256-7.

10 Dale Adams, et al., "Changes in Rural Purchasing Power in Taiwan," 1952-1972, Stanford Food Research Institute, Vol. XIX, No. 2, (Stanford University) (1975), p. 127-145; and Marcia Ong, "Changes in Farm Level Savings and Consumption Behavior in Taiwan," unpublished Ph. D. dissertation, The Ohio State University, 1972.

11 R. J. Hansen and R. G. F. Spitze, "An Economic Analysis of Off-Farm Income in the Improvement of Farm Family Income," University of Illinois, Ag. Expt. Stn., Bulletin No. 319, 1976.

Korea, recognized the importance of increasing off-farm income sources as a major means for raising rural welfare when financial institutions are constrained.[12] Theoretically, farm households may be expected to borrow less for the farm as their off-farm incomes rise. Particularly in developing countries with scarce land resources and high population, farm expansion limits are reached early in development so off-farm income sources need to supplement household incomes. For some households, though, borrowing may continue to rise as more household members work off the farm and capital is required to finance off-farm business or increased household consumption. Savings tend to rise with increasing income levels and favorable rates of returns. Thus, the participation of households in financial markets may vary over time with uncertain shifts between borrowing and saving as households move from predominently farm income to off-farm income bases.

Participation in the farm input and consumer goods market reflects farm-firm investment and household consumption behavior. Farm households are both production and consuming units so their consumption and investment decisions are interdependent. Resources are allocated between consumption and investment depending on returns received and the time preference for consumption. Theoretically, the marginal utility received from purchasing farm inputs or consumption will be equal, given that normal equilibrium conditions exist.

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12 Ohene O. Nyanin, "Credit and Small Farmers in South Korea, 1968-1970," unpublished M. S. Thesis, Department of Agricultural Economics and Rural Sociology, The Ohio State University, 1978.

Household activity in the farm input market includes purchases of annual and capital inputs. Inputs which increase production primarily in the year used are classified as annual inputs. Items such as seeds, fertilizer, feed, insect and pest control, expenses for rent, and taxes fall into this category. Capital inputs are longer term investments that increase farm production over more than one cropping season. Machinery, building, irrigation facility and land expenses are some examples. Farm input decisions are affected by farm product and off-farm labor market activities. A change in farm output through participation in the farm product market is expected to influence input expenditures. Likewise, an increase in off-farm work may result in the substitution of capital for farm labor.

In contrast to farm input market, the consumer goods market has been well studied in Taiwan. Consumer goods are broadly defined in this study to include expenditures for food, durables, semi-durables, luxuries, services, education, social activities, and health care. Substantial purchasing power from farm households is important in rural areas to stimulate adequate demand for rural and urban industries. Taiwanese farm household consumption patterns show that the strong participation of farm households in this market contributed significantly to rural growth over the sixties.

Market participation by farm households can change over time in two distinct ways: (1) the absolute amounts of house participation in a market as well as (2) the relative importance of participation in a particular market.

The first type of change captures increases or decreases in absolute amounts of rural market activities, whereas the latter reflects the relative share of an activity in total market participation, hence, the increasing or decreasing significance of different markets over time. This distinction is important for understanding changes in substitution and complementarity among markets. Theoretically, households are expected to increase overall market participation with development, but the relative importance of different markets will also change over time. In the case of Taiwan, where off-farm employment increased in the 1960's and early 1970's, an increase in the labor market but decrease in the farm product and input markets is expected.

METHODOLOGY, SETTING, and DATA

Farm household market participation is quantified by measuring individual and aggregate income and expenditure flows over time. To study changes in market participation two basic issues are examined; absolute changes in the value of household market activities and the share of household total income individual market activities represent. The former is assessed by analyzing average monetary flows. The latter is analyzed by calculating market participation indices (MP_i).[13] Because this study is particularly interested in the relationship between market participation and

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[13] The subscript 'i' refers to the particular market with labor being (L), farm product (FP), financial (F), farm input (FI), consumer goods (C).

off-farm income, further analysis of such relationships is made by separating groups of households by different levels of off-farm income and looking at their market participation indices.

Market participation indices are measured as follows:

$$MP_L = \frac{\text{Off-Farm Income Receipts}}{\text{Gross Household Income}}$$

$$MP_{FP} = \frac{\text{Farm Product Receipts}}{\text{Gross Household Income}}$$

$$MP_F = \frac{\text{Interest Payments}}{\text{Gross Household Income}}$$

$$MP_{FI} = \frac{\text{Farm Input Receipts}}{\text{Gross Household Income}}$$

$$MP_C = \frac{\text{Consumer Goods Expenses}}{\text{Gross Household Income}}$$

Labor market participation (MP_L) includes only receipts from off-farm income sources, including sideline businesses, work on other farms, salary income, and other non-farm income. Farm product market consists of receipts from sales of crops, livestock, fishery, forestry, and on-farm processed products. Given the data, financial market participation could only be measured as interest payments for farm and household loans. Items in farm input receipts include annual purchases for seeds, fertilizer, feed, pest and insect control, rent and taxes plus capital expenses for machinery, buildings, land, and irrigation facilities. Consumer goods expenses represent household expenditures for food, durables, luxuries, semi-durables, education, services, social activities, and health care.

Taiwan represents a developing economy having undergone vast structural changes in its rural areas over the past three decades. Rapid industrial and agricultural growth combined with an equitable distribution of the benefits has greatly improved rural welfare. Government policies for raising rural incomes have changed over the years. Until the late sixties, increased agricultural production was the main tool for improving farm incomes. However, as farm income growth slowed in the mid-sixties, due to diminishing marginal returns to farm production, the government began to encourage the establishment of rural industries. As a result of government policies, and the profitable returns for rural industries, the average amount of off-farm income earned by farm families jumped sixfold from less than NT $10,000 in 1960 to over NT $60,000 by 1975.[14] Such changes in economic structure and policies are expected to be reflected by changing farm household market behavior.

Cross-sectional data are used in this study. The data come from a farm record-keeping project conducted by the Provincial Department of Agriculture and Forestry (PDAF) in Taiwan. The four years, 1960, 1965, 1970 and 1975 are used with 95, 501, 404, and 468 households, respectively. Data from 1960 are not necessarily indicative of general Taiwanese rural economic conditions as only three geographic regions were included in the sample. From 1964 to 1974 the project included all of Taiwan's five

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14 NT $ = New Taiwanese dollars, deflated with 1975 as the base year. For further information on Taiwanese economic development see, M. Gowen, op. cit., p. 12-40.

regions. Voluntary participation by households in the project may also create some bias, and make it likely that these households are somewhat above average.

TRENDS IN FARM HOUSEHOLD MARKET PARTICIPATION

Rural Taiwan's rapid agricultural and nonagricultural transformation during the 1960's and into the 1970's created significant changes and opportunities for farm families. Strong agricultural-nonagricultural linkages are expected to be shown through increased levels of household market participation. Concurrently, the changing importance of different markets due to the rise of off-farm labor and marginal increases in farm productivity, meant shifts in household income and expenditures.

Farm household market participation between 1960 and 1975 is shown in Figures 1 and 2. Average levels of household market activities measured over the four year period is seen in Figure 1. Except for the financial market, tremendous increases occur in all markets from 1960 to 1975.[15] From 1970 to 1975 the rate of increases are particularly sharp, especially for the labor market which measures off-farm income. Such market rises can probably be attributed to one: the off-farm wage rate finally exceeding the farm wage rate after 1970 and, two: changes in government farm policies regarding farm parity.

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15 Low financial market averages probably result from definitional limitations. Being constrained to using flow variables, this category only included interest payments for farm and household credit.

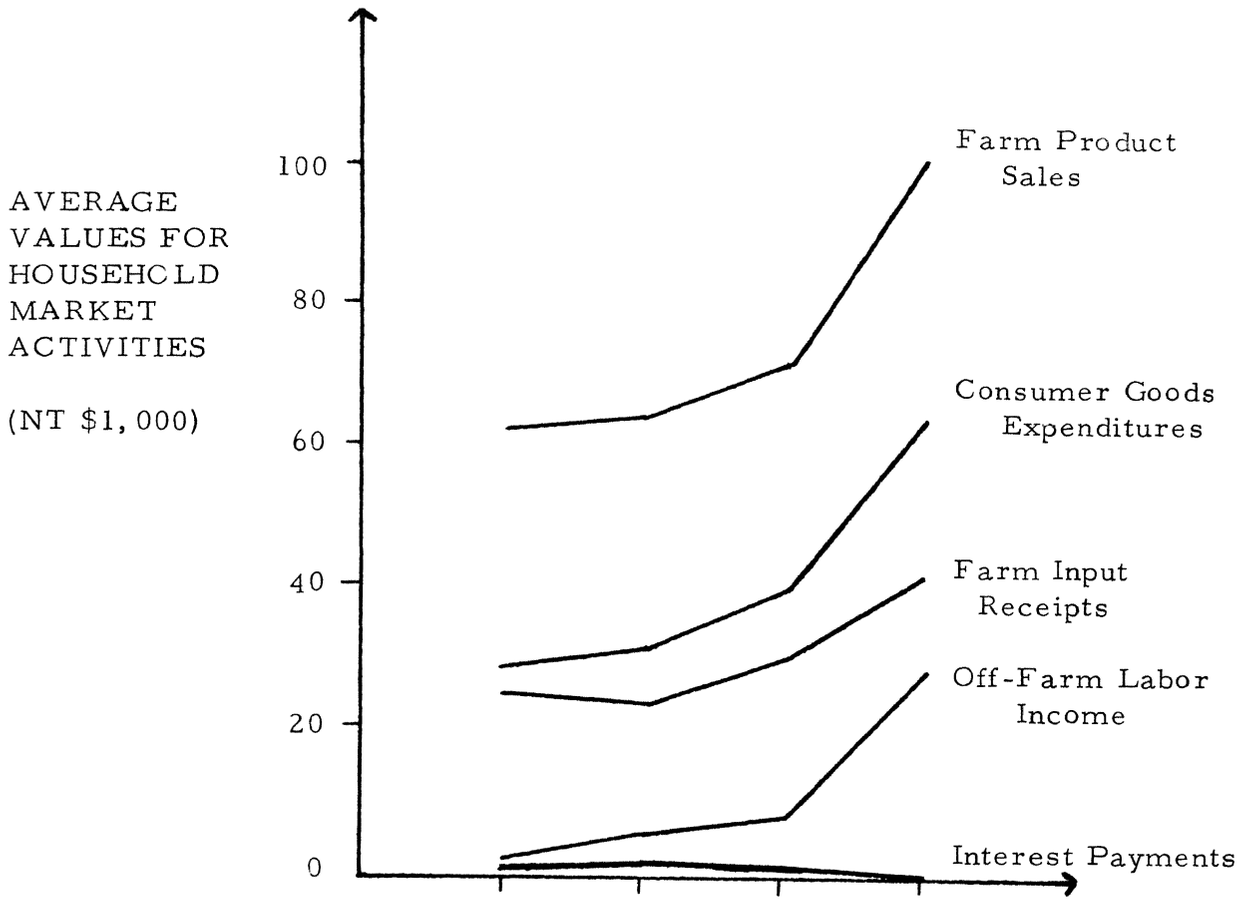

Figure 1: Average Aggregate Values for Farm Household Market Activities, Taiwan, 1960-1975

Source: Gowen, Marcia M., "Farm Household Market Participation in Taiwan, 1960-1975," unpublished M. S. Thesis, Department of Agricultural Economics and Rural Sociology, The Ohio State University, 1978.

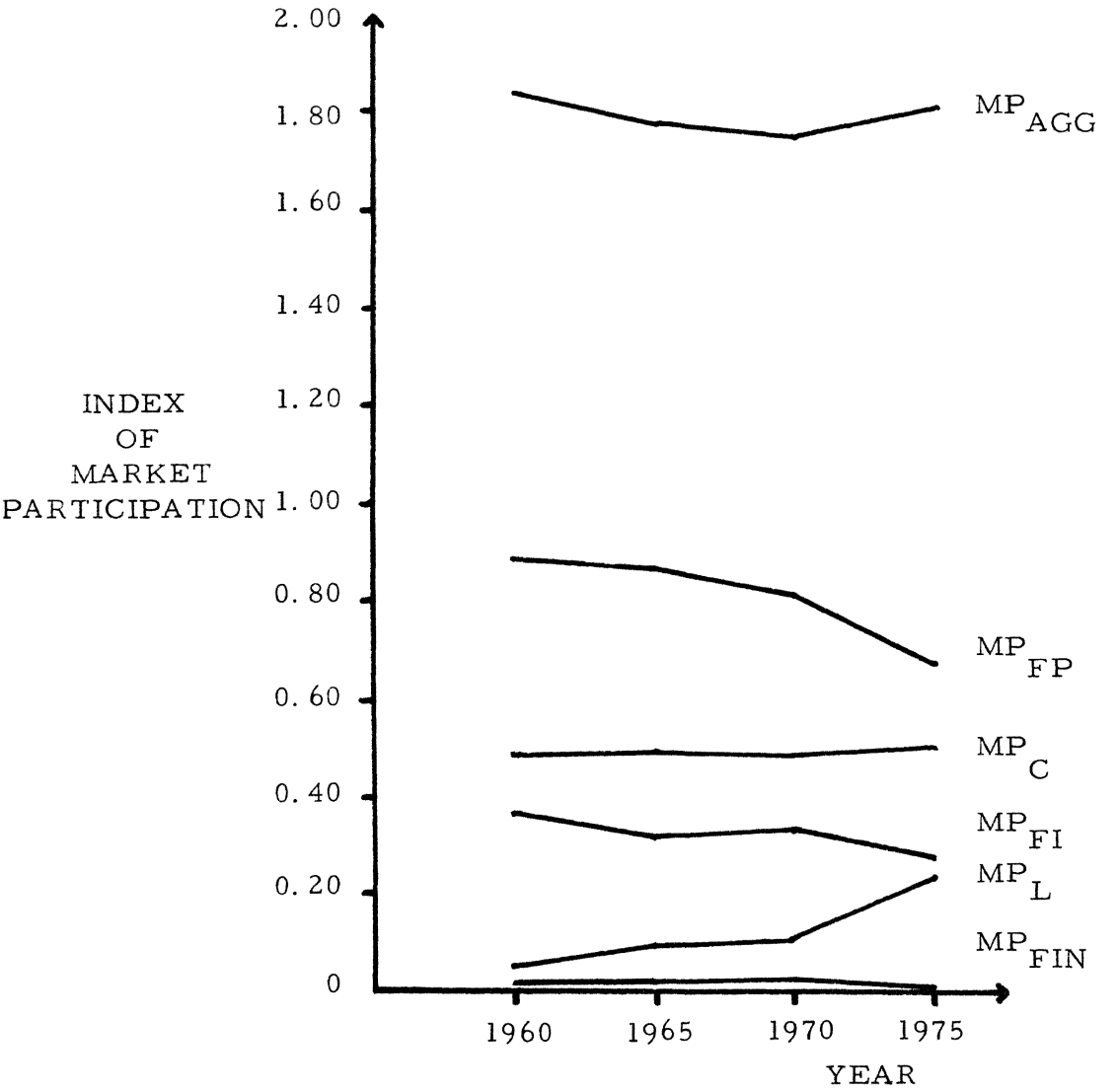

Figure 2: Indices of Market Participation, Taiwan, 1960-1975

Source: Gowen, Marcia M., "Farm Household Market Participation in Taiwan, 1960-1975," unpublished M.S. Thesis, Department of Agricultural Economics and Rural Sociology, The Ohio State University, 1978.

In contrast to the average amount of market participation, Figure 2 shows the shares of market participation relative to household incomes, as defined by the market participation indices. Over the periods, participation in the farm product and input markets shows a substantial relative decline, in contrast to off-farm labor market is significant increase, again being most marked after 1970. The proportion of income spent on consumer goods, however, remained relatively stable over the period, while participation in the financial market declined. Aggregate market participation as a proportion of gross household income declined from 1960 to 1970, then slightly increased in 1975.

Some important structural transformations in farm household market participation are suggested by Figures 1 and 2. First, results in Figure 1 support the hypothesis that farm households increased market participation over time as they became less self-sufficient and more integrated into the nonagricultural sector. In fact, the aggregate dollar value of participation in all markets, if drawn on Figure 1, would show an exponential increase over time. Secondly, the consistantly limited role played by credit during a period of substantial increase in household farm input and consumer goods expenses contrasts sharply to other developing countries' situations where formal agricultural credit is assumed to play a pivotal role in agricultural development. Even if the Taiwanese farm households relied heavily upon informal credit sources, which is relatively implausible given Taiwan's

financial system, the results strongly suggest substantial self-financing of agricultural production and investment by farmers. Such a heavy reliance on self-financing is striking for a country undergoing such rapid agricultural modernization and rural change.

Third, within the context of overall increases in phases of market participation, Figure 2 shows that important market reliance changes occurred during the period. The decline in MP_{FP} and the rise in MP_{L} suggests the substitution of off-farm labor income for farm product receipts. Sharp changes after 1970 may be attributed to the fact that the off-farm wage rate exceeded the farm wage rate, thereby increasing the returns from off-farm employment relative to farm work. Furthermore, the general decline in MP_{FP} indicates that in spite of the sharp increase noted with respect to use of purchased inputs in Taiwanese agriculture (Figure 1), the amount of money spent on inputs declined in relative importance over time. This trend suggests that farm product and farm input markets act as complements. Taiwanese farmers expanded use of modern inputs until most of the benefits of the biological technologies were exhausted, then the growth in use of inputs declined along with the growth in production. Having exhausted their farm production potential, households turned to off-farm sources to maintain or raise their income levels.

Fourth, the consumption market suggests an interesting pattern. It appears from Figure 2 that Taiwanese farm households spent an amazingly

constant proportion of gross household income on consumption over the period. Households, thus, increased their consumption levels about as fast as total household income increased, in spite of the fact that other authors note strong household savings over this period.[16] Taiwanese farmers appear to be able to maintain heavy consumption patterns and at the same time increase financial savings and on-farm investments. Unfortunately, the data did not permit detailed identification of the types of investments for which interest payments were being made. It is quite possible off-farm investments increased in order to generate higher levels of off-farm and total household income.

Perhaps the most significant feature is the aggregate market activities were extremely high and stable between 1960 and 1975. The values for MP_{AGG} ranged between 184 and 196, thus an extremely high proportion of gross farm household income flowed through the formal markets during the entire period. The stability and level of market activities is surprising and educational for a country which has been considered economically developed only in recent years.[17]

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16 Adams, et al., op. cit.

17 Since saving and borrowing are not included in the measure, an even greater underestimation of total marketing activities is suggested.

OFF-FARM INCOME AND MARKET PARTICIPATION

In the above analysis, off-farm employment is a strikingly significant factor influencing farm household market activities over time, just how important differences in levels of off-farm income are to market participation is shown in Table 1, where households are broken down by the amount of total income earned from off-farm sources. Except for the financial market, significant differences in market participation indices exist between the various categories of farm households. Thus, market participation and off-farm income appear to be correlated. The labor participation index, MP_L and off-farm income are positively related, as would be expected given the variables' definition. It was also found that adult farm labor days decreased at an increasing rate over the period as the share of off-farm income rose.[18] In 1975, for example, households with 0 to 10 percent off-farm income spent over 2-1/2 times more labor days on-farm than households with greater proportions of off-farm income.

Given the above relationship between work on the farm and off-farm income, it's not surprising that MP_{FP} and MP_{FI} declined as households earned higher proportions of income from off-farm sources. The share of farm production and input use appear to fall especially rapidly for households which earn over 50 percent of their income from off-farm sources, households that really are only part-time farmers. This suggests a definite trade off between farm and off-farm work.

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18 Marcia Gowen, op. cit., p. 76

Table 1: Farm Household Market Participation in Taiwan by Percentage of Off-Farm Income, 1960, 1965, 1970, 1975

% Off-Farm Income[a/]	N[b/]	Market Participation Indices				
		MP_L	MP_{FP}	MP_F	MP_{FI}	MP_C
1960						
Average	95	0.049	0.910	0.009	0.377	0.488
0-10%	68	0.018	0.971	0.008*	0.387	0.477
Over 10%	27	0.126	0.790	0.014	0.350	0.514
1965						
Average	501	0.100	0.859	0.013	0.323	0.497
0-10%	267	0.019	0.969	0.013*	0.360	0.450
11-50%	213	0.165	0.768	0.013	0.293	0.542
Over 50%	21	0.679	0.389	0.012	0.164	0.362
1970						
Average	404	0.134	0.823	0.015	0.350	0.493
0-10%	166	0.018	0.968	0.017**	0.396	0.444
11-50%	221	0.192	0.750	0.014	0.329	0.518
Over 50%	17	0.524	0.356	0.012	0.174	0.678
1975						
Average	468	0.244	0.678	0.007	0.269	0.531
0-10%	102	0.015	0.957	0.007*	0.286	0.442
11-50%	249	0.216	0.712	0.006	0.275	0.518
Over 50%	117	0.503	0.362	0.009	0.155	0.635

[a/] Percentage of off-farm income to gross household income.

[b/] N = Sample size

All breakdowns show F-ratios with significant levels above 0.01, except for * which are significant at the 0.05 level and ** which are non-significant.

The insignificant relationship between financial market participation, MP_F, and off-farm income may result from insufficient data. In Gowen,[19] financial assets outstanding at the end of the year showed a significant relationship with off-farm income. Financial assets measured as cash balances and demand deposits were highest for groups earning more than 10 percent but less than 50 percent of their income from off-farm sources. Furthermore, amount of credit outstanding dropped substantially for farms earning high levels of off-farm income in both 1970 and 1975.

Off-farm income and consumption, as a proportion of total income, appear to be directly related except in 1965. Also households consumed a larger share of their income over time as off-farm income increased. Such an increase is consistent with an hypothesized demonstration effect of urban lifestyles on rural families and a decline in profitable farm investment opportunities. Additional analysis of the relationship between consumption and off-farm income would be instructive in demonstrating how consumer expenditures change with increased rural industrialization.

SUMMARY AND CONCLUSIONS

The results of this analysis strongly support the argument that significant changes in market behavior develop as farm households increase linkages with the nonagricultural sector. In Taiwan consistantly high and expanding market participation occurred from 1960 to 1975 with sharp changes in the relative importance of various markets as rural industrialization increase

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19 Ibid., p. 90.

and agricultural productivity stabilized. A government strategy emphasizing strong agricultural development followed by rural industrialization appears to have fostered strong agricultural as well as rural industrial sectors that gave farm households diversified employment opportunities and, subsequently, the ability to maintain or improve income positions.

The two most striking features are the pivotal roles off-farm employment and self-financing play in Taiwan's rural development. Off-farm employment, growing quite rapidly after 1970, appears to have substituted, in part, for farm production activities. This decline in the farm product market was complemented by a decline in the relative importance of the farm input market. On the other hand, consumer goods expenditures were high and stable throughout, suggesting that a good portion of income was channeled into consumption activities.

In contrast to other developing economies where increased investment and expenditures depended heavily upon financial inputs, Taiwan's sharp increase in the value of agricultural inputs and consumer goods purchased by farm households appears to have come from self-financing, not through the formal financial markets. Households seem to have consistently used a small amount of credit relative to total household income. This fact may have occurred for two reasons. First, increased off-farm income may have provided the additional liquidity required to finance agricultural inputs. Second, Taiwanese households may have simply adjusted their household and income expenditures so that a larger proportion of farm expenditures were self-financed than is

normally expected in most countries experiencing such rapid agricultural modernization. Prior to 1970 when off-farm income increased so rapidly, it seems that self-financing was also the major means to acquire farm inputs and consumers goods.

Extension of these results to other developing countries naturally requires some caution. The Taiwanese development experience has a number of unique characteristics. First, Taiwan is an extremely small, relatively homogeneous country with a strong centralized government. It has been able to pursue a development strategy which included decentralized industrialization, a strategy other countries might not be able to follow as easily. Second, Taiwan received substantial quantities of foreign assistance, particularly from the U.S., which helped finance its development. Third, it has been extremely successful in placing its industrial products in foreign markets. Many of these products were produced in the small-scale, dispersed rural industries which utilized surplus labor available from the farm sector.

These unique features of the Taiwanese model, however, should not obscure the fact that strong agricultural and nonagricultural linkages developed in the agricultural sector; moreover, these linkages appear extremely important in explaining household market participation. The type of development strategy which emerged emphasized biological technologies for the agricultural sector and dispersed small-scale industries for a growing rural industrial sector. When needed, government policies helped to stimulate rural industrial expansion. Thus, the two sectors mutually reinforced each

other with the farm sector playing an important role in serving as a source of labor as well as a market for farm inputs and consumer goods. By providing off-farm employment, the Taiwanese were able to achieve rapid agricultural growth while also maintaining an equitable distribution of income among the farm population.[20]

Many developing countries have ignored this type of intersectoral interaction which Taiwan demonstrates can be extremely crucial to rural development. Most have chosen development strategies emphasizing rapid, large-scale industrialization concentrated in urban centers. Agriculture is usually ignored, discriminated against, or allowed to stagnate. Problems of massive urban migration and unemployment, growing concentrations of incomes, and social unrest may be traced to this strategy. This study has shown the key role and changing pattern farm household market participation plays in a balanced economic development strategy.

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[20]Gowen, op cit., shows farm income distributions to be favorably affected by off-farm income. The total income shares of the lowest 40 percent of the farm households with just farm income was 22 percent in 1960 and only 15 percent in 1975, but when off-farm income is included the income shares of the lowest income group rose to 24 and 22 percent in 1960 and 1975, respectively. Likewise, the top 20 percent of the households had income shares of 38 and 45 percent when just farm income was measured in 1960 and 1975 but these income shares fell to 36 and 38 percent in 1960 and 1975, respectively, when off-farm income was included in total income. Gini ratios, a measure of income inequality with zero being perfect equality and one perfect inequality, was 0.29 for farm income versus 0.26 for total income, which includes off-farm income, in 1960. In 1975 when income inequality among farm households increased to 0.40 for just farm income, the inclusion of off-farm income brought the ratio down to 0.29. See Ibid., p. 25, for more detailed information on income shares and Gini ratios of farm families with and without off-farm income.